Condom Use among Pregnant Women Living with HIV in Southern Brazil

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Abstract

This cross-sectional study aimed to identify factors associated with condom use among HIV+ pregnant women in Porto Alegre, Brazil. A survey was administered to 72 HIV+ women attending a clinic for HIV/AIDS pre-natal care. Median age was 28.5; mean number of years of education was 7.4, and 78% were married. All participants were receiving prevention to mother-to-child-transmission (PMTCT) at recruitment; 65% had already been diagnosed with AIDS. More than half (56%) were diagnosed HIV+ during their current prenatal care or previous pregnancies. Eighty-three percent were sexually active during current pregnancy and 81% reported having a steady partner. Of them, 23% had a partner with unknown HIV status and 45% said they knew that their partner(s) were HIV+. Always using a condom with all sexual partners was reported by 48% women and 65% reported using a condom during their last sexual intercourse. Using multiple logistic regression analysis, consistent condom use was found more likely among those who reported sexual debut after age 15 (OR=3.86; 95%IC=1.13–13.11; p=0.02). Prenatal settings provide opportunities to promote condom use, although consistent use remains a challenge for many HIV+ women. Message fatigue and/or lack of empowerment may pose barriers.

Keywords

Sexual Behavior; Condom Use; HIV/AIDS; Women

Introduction

High-risk sexual behavior among HIV-infected individuals has implications for public health (e.g., onward transmission) and personal health (e.g., negative effects of multiple sexually transmitted infections; superinfection) [(J. T. Blackard, 2002), (E. Jong, 2008), (M. Landes, 2007)]. For instance, HIV and Human Papillomavirus (HPV) co-infection increases the risk of lower genital tract cancer and treatment failure among women [A. Ferenczy, 2003]. Yet, most HIV prevention efforts have focused on primary prevention of HIV transmission among high-risk uninfected populations. Working with people living with HIV to help them engage in safer-sex practices deserves more emphasis in light of advancements regarding treatment and life course trajectories. Based on data from the Brazilian context, we have studied how a number of factors affect the condom use among HIV+ women in reproductive age and their male partners.

Sexually-transmitted infection has been the main form of HIV transmission among women in Brazil corresponding to approximately 90% of the AIDS cases reported [Brasil, 2008]. It is estimated according to the Brazilian Ministry of Health that there are 200,000 HIV+ women at the age of 15-49 and many of them become mothers in this context [C. L. Szwarcwald, 2006], which represents an increased risk of mother-to-child-transmission (MTCT). Each year in Brazil, there are about 12,000 HIV+ pregnant women, which represents an HIV prevalence of 0.4% among pregnant women [A. J. Cardoso, 2007]. Many women diagnosed with HIV during pre-natal care receive Prevention to MTCT – PMTCT [J. P. D'Auria, 2006], which also emphasizes the use of condoms.

Research has shown that the prevalence of high-risk sexual behavior is reduced after HIV diagnosis [(G. Marks, 2005), (T. E. Wilson, 2004)]. Many reasons may account for sexual intercourse without condoms

among HIV+ women, including the difficulty in condom use, domestic violence, drug use, and reproductive intentions [(N. Crepaz, 2006), (C. A. Long, 2009), (A. A. Nobrega, 2007), (P. Peretti-Watel, 2006)]. Several studies have reported inconsistent condom use among HIV+ women [(J. E. Levi, 2002), (L. S. Weinhardt, 2004), (K .Wolf, 2003)]. Absalon et al. [J. Absalon, 2005] found that HIV+ women were less likely than HIV+ men to have used condoms with any partner during their last sexual intercourse. HIV+ sexual partner has been associated with less consistent condom use among HIV+ women and men [(J. Absalon, 2005), (T. E. Wilson, 2007)]. Additionally, the presence of other STIs among HIV+ women is also related to inconsistent condom use [(E. Jong, 2008), (M. Landes, 2007), (A. Ferenczy, 2003)], including Brazilian [15, 20]. Among HIV+ victim, risk behavior also may be influenced by beliefs regarding reduced infectivity (e.g., as a consequence of being treated with HAART) [T. E. Wilson, 2004]. Moreover, it is important to consider social determinants (e.g., precarious socioeconomic conditions; low educational level; gendered power imbalances) that predispose, shape and/or exacerbate HIV exposure [J. Ghosh , 2009]. Based on data from a survey among HIV+ women attending a pre-natal care clinic in Porto Alegre, Brazil, the current article describes patterns of sexual behavior, particularly condom use, as well as identifies associated factors.

Methods

Study Population and Recruitment

A survey on sexual behaviour and associated risk factors was conducted as part of a longitudinal study, in which HIV+ women were observed from pregnancy to their infants' second year of life. The project was approved by the Committee of Ethics in Federal University of Rio Grande do Sul and written informed consent was provided by each participant. Eligibility was limited to adult pregnant HIV+ women. All participants were receiving PMTCT (e.g., HAART; specialized pre-natal care; counseling about avoidance of breastfeeding) and 65% of them have been receiving HAART due to their AIDS diagnosis. During May 2006 to August 2008, all women (N=128) in the longitudinal study were invited to complete a cross-sectional survey for the baseline interviews (39 women in the larger study could not be contacted or had withdrawn from study before completing the survey).

Data Collection

Of the 89 women who remained in the longitudinal study, a total of 72 women completed a structured survey with close-ended and open-ended questions, which focused on their sexual behaviour since HIV diagnosis. There were no statistically significant socio-demographic differences between the women who were surveyed and those who exited the longitudinal study. All surveys were administered in private interview settings by trained interviewers who were not clinic staff members. Each interview lasted approximately one hour and took place after the woman's regular prenatal visit. In order to compensate for the extra time participants spent at the clinic, each received a $15 reimbursement for food and bus tickets per completed interview.

1) Sociodemographic Characteristics

Participants were asked to provide demographic data, including age, educational level, number of children, occupational activity and marital status. Information on current partner's imprisonment, partner's drug use and if they have recently received some financial or material support were also obtained.

2) Health Status

Women were also asked about time of HIV diagnosis, the period of their HIV diagnosis (during routine medical care or during current/previous prenatal care), if they had previous pregnancy subsequent to HIV diagnosis, lifetime drug abuse (e.g., crack/cocaine, alcohol, marijuana) and about AIDS diagnosis (it was considered when their CD4 cell counts was less than or equal to 350 cells/μl).

3) Sexual Behaviour and Partnership

Additional data were obtained on: age and condom use at sexual debut; current sexual activity; lifetime and current number of steady and/or casual partners; having a current or former drug user as a sexual partner or not; current partners' HIV-status. Women also were asked if they had ever been diagnosed with a STI. The perceived impact of HIV on the women's sexual lives and difficulties in using condoms were investigated with open-ended questions which were classified based on their answers (e.g., Do you feel anything change in your sexual life after your HIV diagnosis? Do you have any difficulty in using condoms? What difficulties

do you have? Who usually takes the initiative to use condoms – you/your partner/both?).

4) Outcomes Variables: Condom Use

Condom use was selected as the primary outcome based on its association with HIV infection and the potential risk for the child and woman's health. Participants were asked to report how frequently they used condoms: (a) subsequently to diagnosis; and (b) with their current partner(s). The women answered these questions as they pertained to 'steady' partners (i.e., partners that they had a long-term, consensual or legal established, relationship with) as well as casual ones. For example, women were asked: "How frequently you used condoms with your steady partner after receiving HIV diagnosis?" and they could choose among four answer options (Always; More than half the time; Half the time; Never). For each of these questions, women were asked to report if they have used either male or female condoms. Consistent use of condom was defined as 'always' using condoms with all sexual partners. Current consistent use of condom (always using a condom with all sexual partners) and consistent use of condom since HIV diagnosis were analyzed as two separate outcomes. Relevant associations have been measured and tested for both types of condom use because pregnancy context could potentially affect current sexual functioning and, consequently, condom use practices.

Statistical Analysis

Analyses were conducted using SPSS version 17. Bivariate analyses were used to examine associations among consistent use of condom, sociodemographic and health characteristics of the women, as well as sexual behavior and partnership. Categorical variables were compared using Chi-squared tests or Fischer's exact tests and continuous variables using two-tailed *t* tests. Current consistent use of condom and consistent use of condom since HIV diagnosis were our main outcomes which were considered among sexually active participants. Multiple logistic regressions were used to identify factors independently associated with consistent use of condom. Variables significant at $p \leq 0.05$ in bivariate analyses, and those which were considered as potential confounders, were entered in the final regression model.

Results

TABLE 1. DESCRIPTION OF SOCIODEMOGRAPHIC FACTORS, PHYSICAL HEALTH, SEXUAL BEHAVIOR AND CONDOM USE PRACTICES (N=72)

Sociodemographic factors	M (*sd*)
Age	28.5 (5.8)
Education (years)	7.4 (3.2)
Pregnancy (weeks)	30.3 (4.0)
Number of live children	1.8 (1.4)
Married (%)	77.8
Having no formal occupational activity (%)	51.4
Receiving financial or material support (%)	38.9
Health status	
Time since HIV diagnosis (years)	4.0 (3.8)
Diagnosed during current prenatal care (%)	26.4
Diagnosed during previous pregnancies (%)	29.2
AIDS diagnosis (%)	65.3
Previous pregnancy subsequent to HIV diagnosis (%)	45.8
Abusive use of illicit drug lifetime (%)	19.4
Sexual behavior and partnership	
Lifetime number of steady or casual partners (excluding those who were former sex workers)	5 (7.1)
Age at sexual debut (years)	14.9 (2.0)
Sexual debut before the age of 15 years (%)	41.7
Condom use in sexual debut (%)	43.1
Having been a sex worker (%)	9.7
STI history (%)	37.5
Having a current or former drug user as a sexual partner (%)	19 (26.4)
Current sexual activity (%)	83.3
Having a steady partner currently (%)	81.3
Referred HIV impact in sexual life (%)	70
Current partner's HIV status (%)	
HIV-infected	45
HIV-uninfected	31.7
Unknown HIV status	23.3
Reporting difficulties in using condoms (%)	17
Condom use initiative	
Woman usually proposes (%)	40
Couple shares responsibility (%)	21
Partner usually proposes (%)	14
Condom use outcomes	
Consistent condom use with steady partners subsequently to HIV diagnosis (%)[a]	37.3
Current consistent condom use with all partners (%)[b]	48.3
Using condoms more than half the time (%)	13.3
Using condoms half the time (%)	16.7
Never using condoms (%)	20
Condom use during last sexual intercourse (%)	65

Sociodemographic characteristics, health status, sexual behavior and partnership of the study participants are provided in Table 1. The mean age of participants is 28 years and most women are married. Low levels of education characterized the participant group in

which many of HIV patients were receiving some financial or material support from their relatives and/or government programs directed to low-income people. All participants were in the third trimester of pregnancy and receiving PMTCT. It was reported that most women were diagnosed HIV+ either during their current prenatal visits or during previous pregnancies, and many of them had AIDS (CD4 cell count≤ 350 cells/μl).

Sexual Behavior and Partnership

The majority of the participants is currently sexually active and reported having steady partners (see Table 1). Only two women mentioned to have a casual partner and one of them had a steady partner as well. Forty five percent said that their partner(s) were HIV-infected and seven women reported their current partner was in prison at the time of data collection.

When asked about the number of partners, seven women reported spontaneously that they used to be sex workers in the past. Moreover, over one-third of participants had a history of one or more STIs, other than HIV. Most participants perceived that HIV infection has had negative effects on their sexual lives and the issues raised for them included: diminished interest in sex and/or self-imposed sexual abstinence, worries about HIV transmission, feeling compelled to use condom, and diminished sexual pleasure. Yet, a few women reported feeling concerned about disclosing their HIV status to new sex partners and that after receiving their HIV+ diagnosis they were less confident in their partners' fidelity.

TABLE 2. BIVARIATE ASSOCIATIONS FOR CONSISTENT USE OF CONDOM SUBSEQUENT TO HIV DIAGNOSIS AND CURRENTLY

	Condom use with steady partners subsequently to HIV diagnosis [a]		**Current condom use with all partners [a]**	
	Consistent N=26	Inconsistent N=41	Consistent N=29	Inconsistent N=31
Sociodemographic factors				
Age	**26.7 (6.1)***	**29.5 (5.7)***	**26.6 (6.2)***	**29.7 (5.4)***
Education (years)	**8.4 (2.6)***	**7.1 (3.7)***	8.3 (3.0)	6.9 (3.4)
Number of live children	**1.3 (1.1)***	**2.0 (1.5)***	1.4 (1.1)	2.1 (1.7)
Married (%)				
Yes	84.6	78	89.7	90.3
No	15.4	22	10.3	9.7
Health status				
Time since HIV diagnosis (years)	3.0 (2.5)	5.0 (4.3)	3.8 (3.4)	4.6 (4.5)
AIDS diagnosis (%)				
Yes	60	73.2	64.3	67.7
No	40	26.8	35.7	32.3
Previous pregnancy after HIV diagnosis (%)				
Yes	**34.6***	**58.5***	44.8	45.2
No	**65.4***	**41.5***	55.2	54.8
Abusive use of illicit drug lifetime (%)				
Yes	15.4	24.4	20.7	19.4
No	84.6	75.6	79.3	80.6
STI history (%)				
Yes	26.9	46.3	44.8	41.9
No	73.1	53.7	55.2	58.1
Sexual practices and partnership				
Lifetime number of steady or casual partners	7.0 (5.1)	8.8 (8.3)	8.9 (8.0)	7.4 (7.2)
Age at sexual debut (years)	**15.6 (1.8)***	**14.5 (2.0)***	15.3 (1.9)	14.8 (1.9)
Sexual debut before the age of 15 years (%)				
Yes	**23.1***	**48.8***	34.5	45.2
No	**76.9***	**51.2***	65.5	54.8
Condom use in sexual debut (%)				
Yes	**65.4****	**34.1****	**58.6***	**32.3***
No	**34.6****	**65.9****	**41.4***	**67.7***
Having been a sex worker (%)				
Yes	11.5	9.8	10.3	9.7
No	88.5	90.2	89.7	90.3
Having a current/former drug use partner (%)				
Yes	28	31.6	32.1	27.6
No	72	68.4	67.9	72.4
Current partner's HIV status (%)				
HIV-infected	30.8 (34.8)	69.2 (51.4)	44.4 (42.9)	55.6 (48.4)
HIV-uninfected	52.6 (43.5)	47.4 (25.7)	57.9 (39.3)	42.1 (25.8)
Unknown HIV status	38.5 (21.7)	61.5 (22.9)	38.5 (17.9)	61.5 (25.8)
Reporting difficulties in using condoms (%)				
Yes	16	19.5	14.3	19.4
No	84	80.5	85.7	80.6
Referred HIV impact in sexual life (%)				
Yes	**83.3***	**61***	**50****	**82.1****
No	**16.7***	**39***	**50****	**17.9****

[a] *p* values from comparisons of consistent and inconsistent condom user groups using *t* tests or Mann-Whitney for continuous measure and chi-square analysis for categorical measures; * $p \leq 0.05$; ** $p \leq 0.01$.

TABLE 3. LOGISTIC REGRESSION MODELS PREDICTING CONSISTENT CONDOM USE SUBSEQUENT TO HIV DIAGNOSIS AND WITH CURRENT SEXUAL PARTNER(S)

Outcome 1: Consistent condom use with steady partners subsequently to HIV diagnosis (N=64) [a]					
	Coefficient	Standard Error	AOR	*p*	95% CI Odds Ratio
Sexual debut after the age of 15	1.351	0.624	3.862	0.03	1.13 – 13.11
Condom use in sexual debut	-1.242	0.567	0.289	0.02	0.09 – 0.87
Constant	-.774	0.557			
Outcome 2: Current consistent condom use with all partner (N=57) [a]					
	Coefficient	Standard Error	AOR	*p*	95% CI Odds Ratio
Condom use in sexual debut	-1.339	0.617	0.262	0.03	0.07 – 0.88
Referred HIV impact in sexual life	-1.688	0.671	0.185	0.01	0.05 – 0.69
Constant	1.257	0.539			

[a] All variables that showed bivariate associations (p >.05) with each outcomes were entered in the logistic regression models as well as potential confounders, but only variables which reached significance in predicting condom use appear in the table.

Thirty seven percent of the women reported consistent use of condom with all sexual partners subsequently to their HIV diagnosis. At the time of the survey, twenty percent reported never using condoms (see Table 1). No one reported use of female condoms. Some participants (17%) described that there had difficulties in using condoms and their answers revealed complaints as: skin irritation, partners' resistance, condom failure, or down sexual pleasure. Nearly half of women (40%) mentioned that they usually are the one to propose using condom, while 21% said that this was a responsibility share by both of themselves and their partner(s). Four HIV+ women also reported reluctant to use condoms because they wanted to be pregnant.

Factors Associated with Consistent Condom Use

Bivariate analyses showed that being younger, having fewer children, and receiving an HIV diagnosis more recently (during current pregnancy) were associated with consistent use of condom with steady partner(s) subsequent to HIV diagnosis (see Table 2). Younger women also were more likely to use condoms in their current sexual relationship(s). Women who had their sexual debut after the age of 15 and who reported that they had used a condom at first sexual intercourse also were more likely to use condoms consistently since HIV diagnosis. Women who reported using condom at first sexual intercourse also were more likely to use condoms with their current partner(s). Women who had had a previous pregnancy subsequent to their HIV+ diagnosis were less likely to use condoms than those who received their HIV+ diagnosis during their current pregnancy or those who were experiencing their first HIV+ pregnancy. Finally, women who described some HIV impact on their sexual lives were more likely to be consistent users of condoms whether since HIV diagnosis or currently. Partners' HIV status, lifetime number of steady and/or casual partners and condom use practices before HIV diagnosis were not significantly associated with condom use.

When each of the variables was entered into a logistic regression, sexual debut after the age of 15 and condom use in sexual debut remained significant predictors of consistent use of condom with steady partners after HIV diagnosis (X^2=-39.983, df=1, p<.02; see Table 3). Similarly, condom use in sexual debut having referred HIV impact on sexual life variables was also found to be significant overall in the model predicting current consistent condom use with any partner (X^2=-37.566, df=1, p<.007; see Table 3). The relationships for both outcomes maintained significance after accounting for potential confounders as educational level, use of illicit drugs lifetime, and being a sex worker.

Discussion

Inconsistent use of condom is related to several reasons including: HIV transmission to uninfected partners; increased risk to other STIs and STI-associated complications as well as AIDS progression [[(J. T. Blackard, 2002), (E. Jong, 2008)]. Further, inconsistent use of condom during pregnancy can have negative consequences for fetal health (e.g., STI congenital infections, high viral load increasing MTCT risk). Among this group of HIV+ pregnant women in Porto Alegre, Brazil, most were reported having a steady partner, with who nearly half did not use condoms consistently even if they were HIV-uninfected. These findings parallel to results from other studies on HIV-infected population [(L. S.

Weinhardt, 2004), (K .Wolf, 2003)], although our findings suggested higher levels of inconsistent use of condom than that of those reported among HIV+ women in reproductive age [J. L. Raiford, 2007].

Possible explanations for the high level of inconsistent use of condom among these women could be related to their economical dependence and limited access to education. Such social settings tend to increase women's vulnerability to HIV risk and limit their access to information as well as agency in negotiating safe sex [(] J. Ghosh, 2009), (N. J. Santos, 2009)]. On the other hand, many women in our study have reported that they used to propose using condom, which could indicate some level of sexual agency. Although, it is considered that condom use depends directly on the partners' capacity to construct a new couple identity and intimacy in face of issues as disease acceptance and transcending condom use as a medical prescription to truly enjoy the protected sexual experience. Then, resistance to the use of condoms among women can be related to sex discouragement associated with infidelity and promiscuousness meanings or with the need for contraception and protection against sexually transmissible disease [(N. J. Santos, 2009), (M. T. Galvão, 2001)]. In addition, the culture of contraceptivein Brazil traditionally sought to avoid barrier methods perceived to interfere with the sexual act or to demand communication between sexual partners.

Our findings also point to the complex relationship between condom use and HIV diagnosis [(G. Marks, 2005), (T. E. Wilson, 2004)]. In our study, women who were younger and had received their HIV diagnosis recently were more likely to use condoms, as shown in previous studies [M. Lurie, 2008]. This finding highlights health providers should discuss safe sexual practices continuously with HIV infected women to assure condom use adherence. It is also found that delayed sexual debut and condom use in first sexual intercourse were independently associated with consistent condom use, similar to other reports regarding HIV-infected as well as uninfected populations [(T. Shafii, 2007), (M. F. Silveira, 2005)]. Participants in the current study who had a previous HIV+ pregnancy were less likely to use condoms than those who were diagnosed during their current pregnancy. These results indicate that it is important for clinicians to be sensitive to women's sexual histories as well as their current life contexts when planning secondary prevention related to HIV and STIs [K. Shannon, 2009]. Indeed, our findings point to the importance of intervening to address negative condom use experiences and/or lack of agency in sexual life in addition to more conventional approaches that emphasize individual motivational readiness (e.g., self-efficacy) to promote consistent condom use [(P. Peretti-Watel, 2006), (N. Crepaz, 2002)].

While consistent use of condom after HIV diagnosis has been documented [(G. Marks, 2005), (T. E. Wilson, 2004)], and decreases over time following diagnosis also have been noted. Among HIV+ women, unprotected intercourse has been associated with perception of little personal control over their male partner's use of condoms, less assertiveness, partner's desire to have children, and use of other contraceptive methods [N. Crepaz, 2002]. It is possible that people tend to show higher adherence to healthier behaviors, including condom use, during an initial phase of adjustment to HIV. Subsequent to a period of adjustment, difficulties related to gender power imbalances in sexual situations (that predispose women to unsafe sexual encounters), 'trump' concerns about HIV positivity; which has been demonstrated previously in both serodiscordant and seroconcordant relationships [(C. A. Long, 2009), (J. L. Raiford, 2007)].

Women who thought that their HIV diagnosis had affected their sex life were more likely to be consistent users,of condom which may indicate increased awareness and caution about personal health status after HIV diagnosis [G. Marks, 2005] as well as women's worries about the possibility of MTCT [J. P. D'Auria, 2006]. At the same time, HIV impact on sexual life tended to be negatively perceived by participants (e.g., worries about HIV transmission), which could result in less sexual satisfaction and diminish sexual activity [K. Siegel, 2006], particularly over time. Surprisingly, partners' HIV status was not associated with condom use, contradicting with some previous studies [(K .Wolf, 2003), (J. Absalon, 2005), (T. E. Wilson, 2007)] and raising new questions about condom use among HIV-affected sexual partnerships. Perhaps, message fatigue related to condom use and/or women's lack of empowerment represent important areas that require additional research and intervention focus (e.g., the use of female condoms; addressing male partners' dislike of condoms; gender inequities in relationships) [(S. Kalckmann, 2009), (A. Keegan, 2005), (R. Jewkes, 2008), (L. M. Williamson, 2009), (P. E. Stevens, 2007)]. For example, prenatal clinics provide good opportunities to successfully

promote condom use [T. S. Kershaw, 2009], because the majority of HIV+ pregnant women are motivated to adhere to PMTCT at least for the sake of their child. Reaching HIV+ women at earlier stages in their pregnancies holds promise, not only in reducing MTCT level but also for health promotion in general.

Interventions also should be developed to address the needs and responsibilities of sex partners, perhaps using the prenatal period to generate opportunities to approach expectant fathers and/or other partners. The Brazilian protocol for PMTCT establishes prenatal care and HIV treatment that must be conducted in a single point of care [Brasil, 2010], which usually is the same place where all people receive their regular HIV treatment. Taking it into account, we suggest that it may be beneficial to enhance the links between pregnant women's male sex partners and the clinic during prenatal care in order to provide enhanced counseling and HIV testing opportunities. Furthermore, strategies as the Men's Pre-Natal Care, sponsored by the Brazilian National Policy for Men's Health, could promote men's participation during pre-natal care (including the promotion of HIV test on male partners) as well as offer other preventive health exams on diabetes and hypertension screening [T. C. Lima, 2010].

Last but not the least, because the survey is cross-sectional conducted in a relatively small (<100) sample, our results should be generalized with caution. Additionally, this study has been conducted with a clinic-based convenience sample, which may not represent community samples. The interviewer-administered survey also may have been affected by social desirability (e.g., to report condom use during pregnancy). Yet, this study is important as it is characterized with condom use among a population that has high HIV prevalence levels. These findings underline the need for more intensive counseling efforts for both women and men, and additional supportive actions (e.g., increased free access to male and female condoms; promotion on pleasurable use of condoms) that are tailored to increase women's agency and that address HIV risk in respectful and effective ways in which the reproductive and sexual rights of HIV+ women are acknowledged as well.

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